FIG. 1

1: ELECTRONIC SETTLEMENT SYSTEM

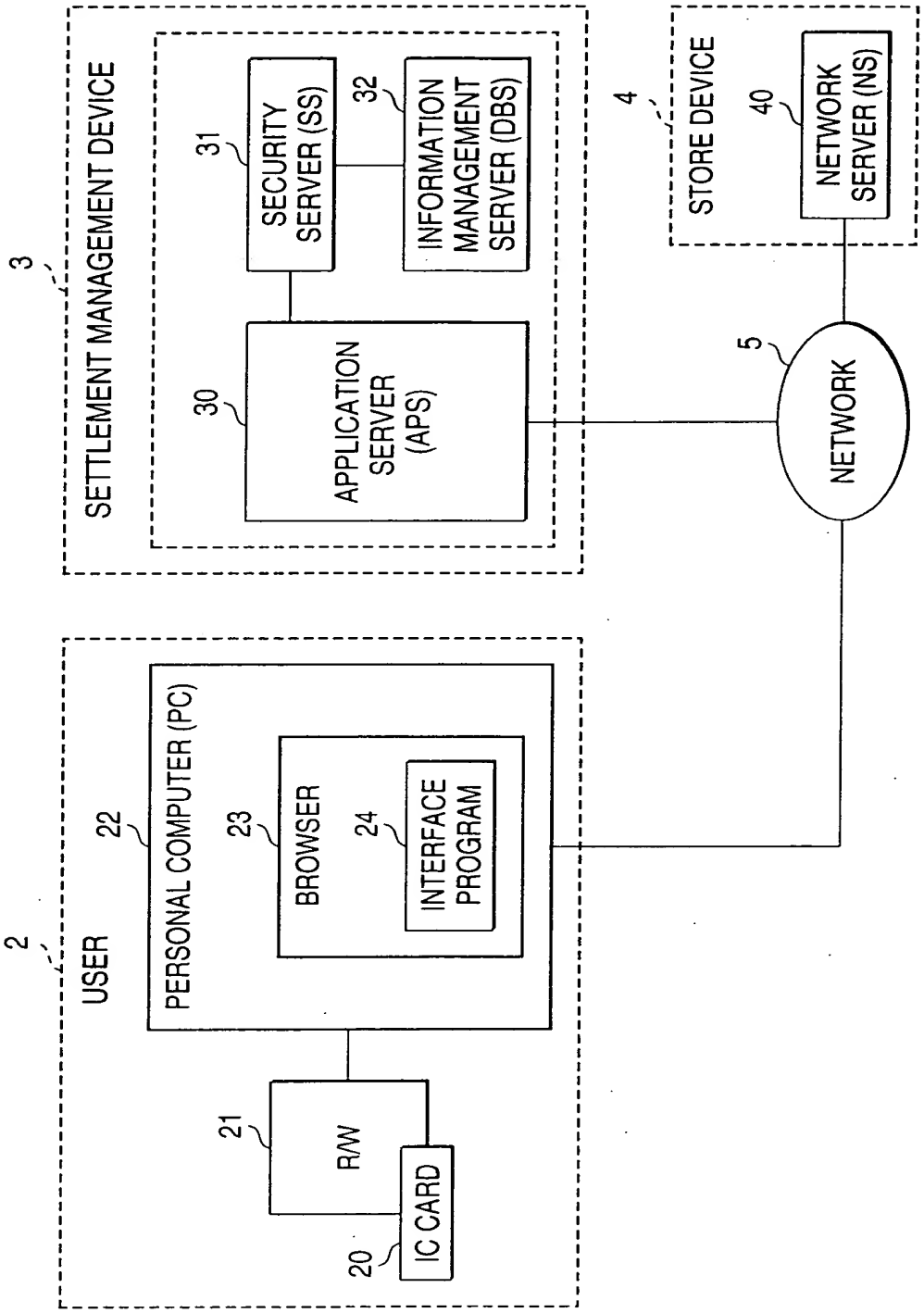


FIG. 2A

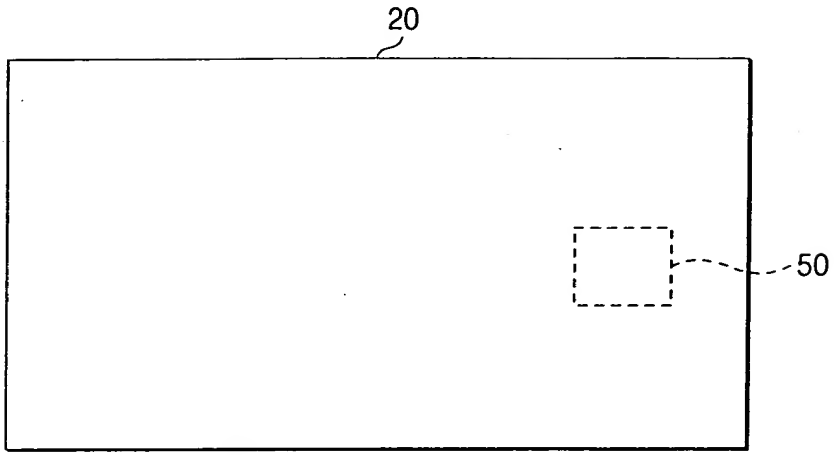

20
50

FIG. 2B

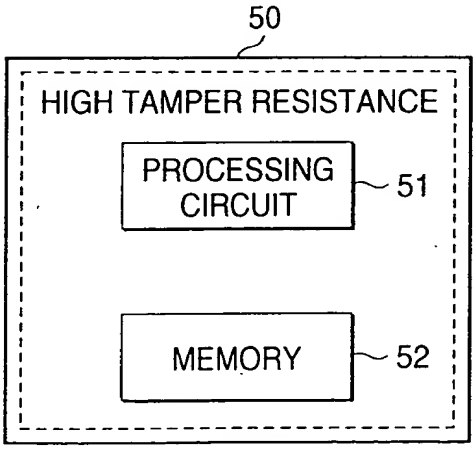

50
HIGH TAMPER RESISTANCE
PROCESSING CIRCUIT
51
MEMORY
52

FIG. 3

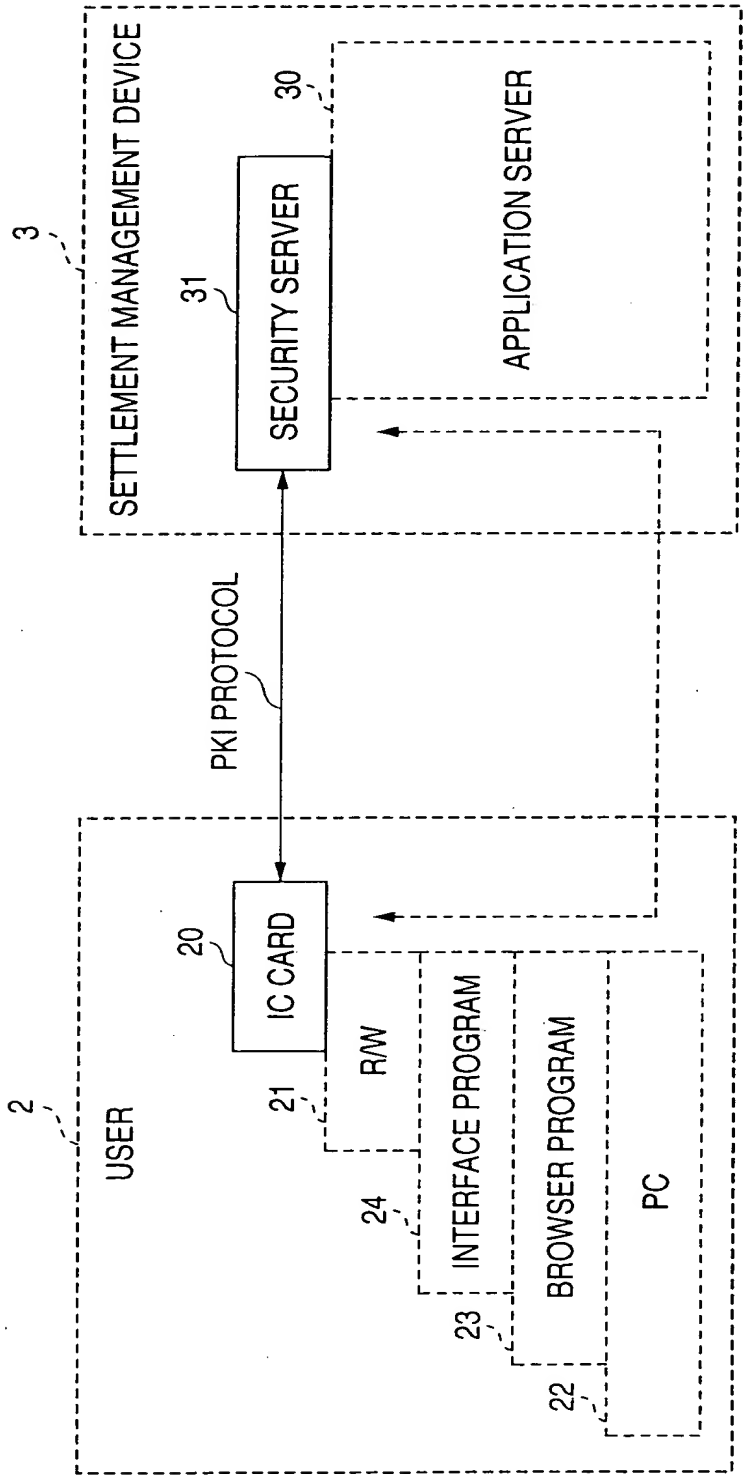

SETTLEMENT MANAGEMENT DEVICE
3
SECURITY SERVER
31
APPLICATION SERVER
30
PKI PROTOCOL
USER
2
IC CARD
20
R/W
21
INTERFACE PROGRAM
24
BROWSER PROGRAM
23
PC
22

FIG. 4

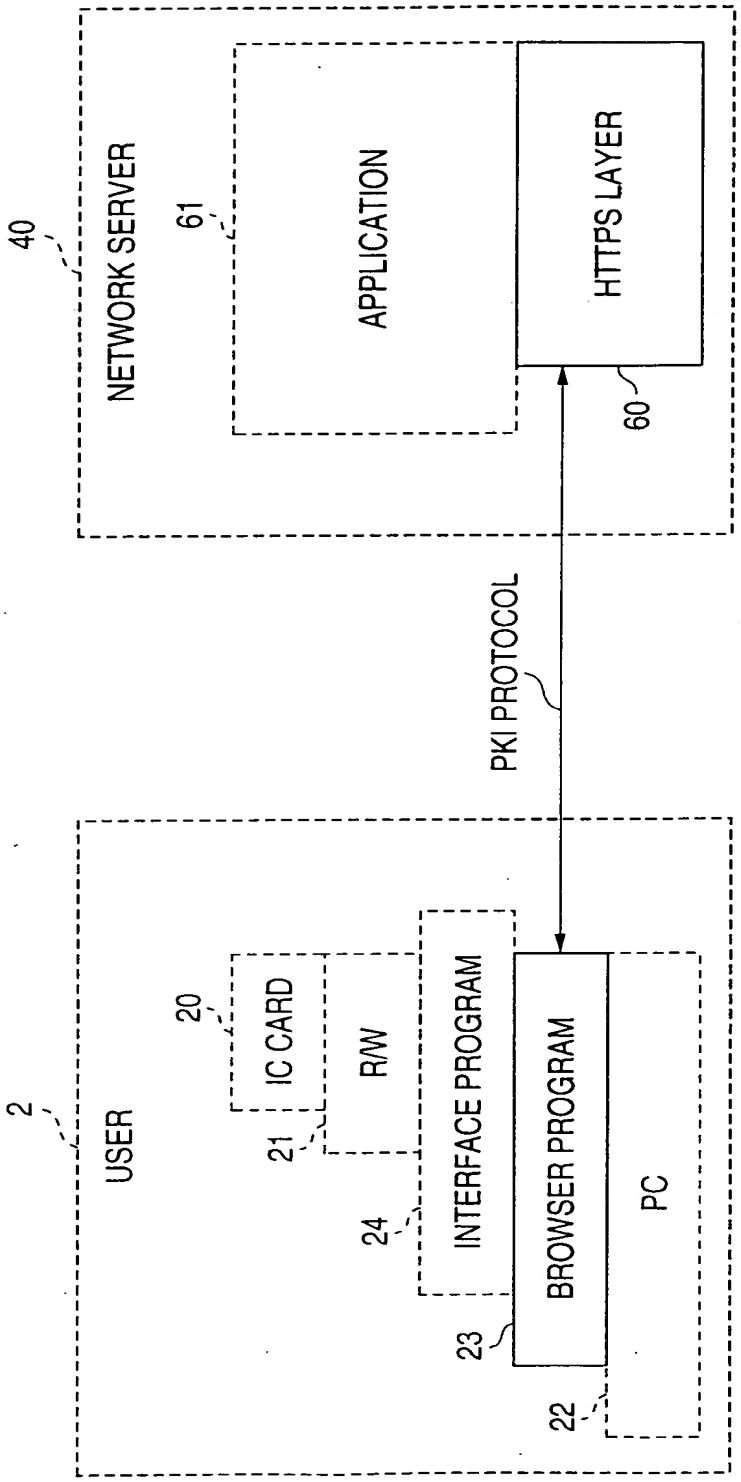

NETWORK SERVER
40
APPLICATION
61
HTTPS LAYER
60
PKI PROTOCOL
USER
2
IC CARD
20
R/W
21
INTERFACE PROGRAM
24
BROWSER PROGRAM
23
PC
22

FIG. 5

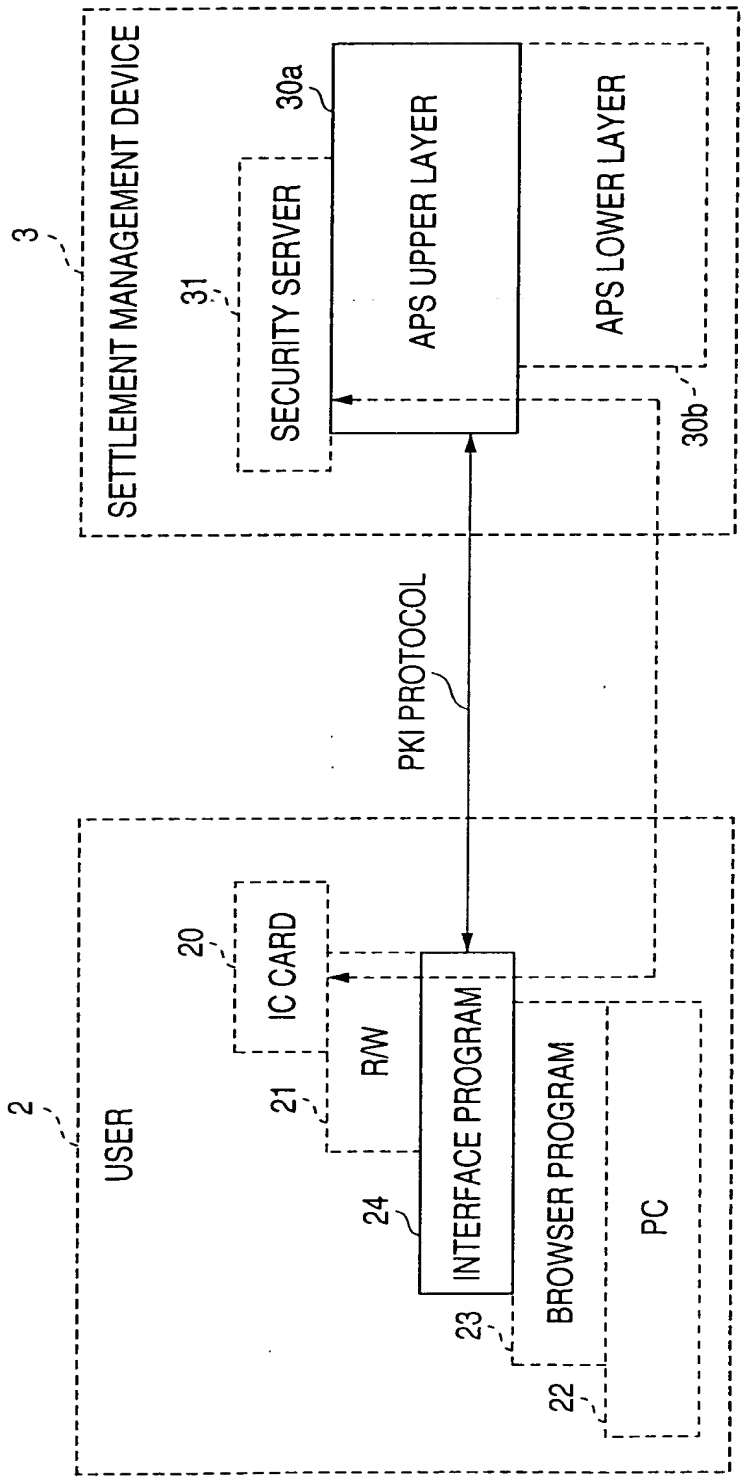

3
SETTLEMENT MANAGEMENT DEVICE
31
SECURITY SERVER
30a
APS UPPER LAYER
APS LOWER LAYER
30b
PKI PROTOCOL
2
USER
20
IC CARD
21
R/W
24
INTERFACE PROGRAM
23
BROWSER PROGRAM
22
PC

FIG. 6

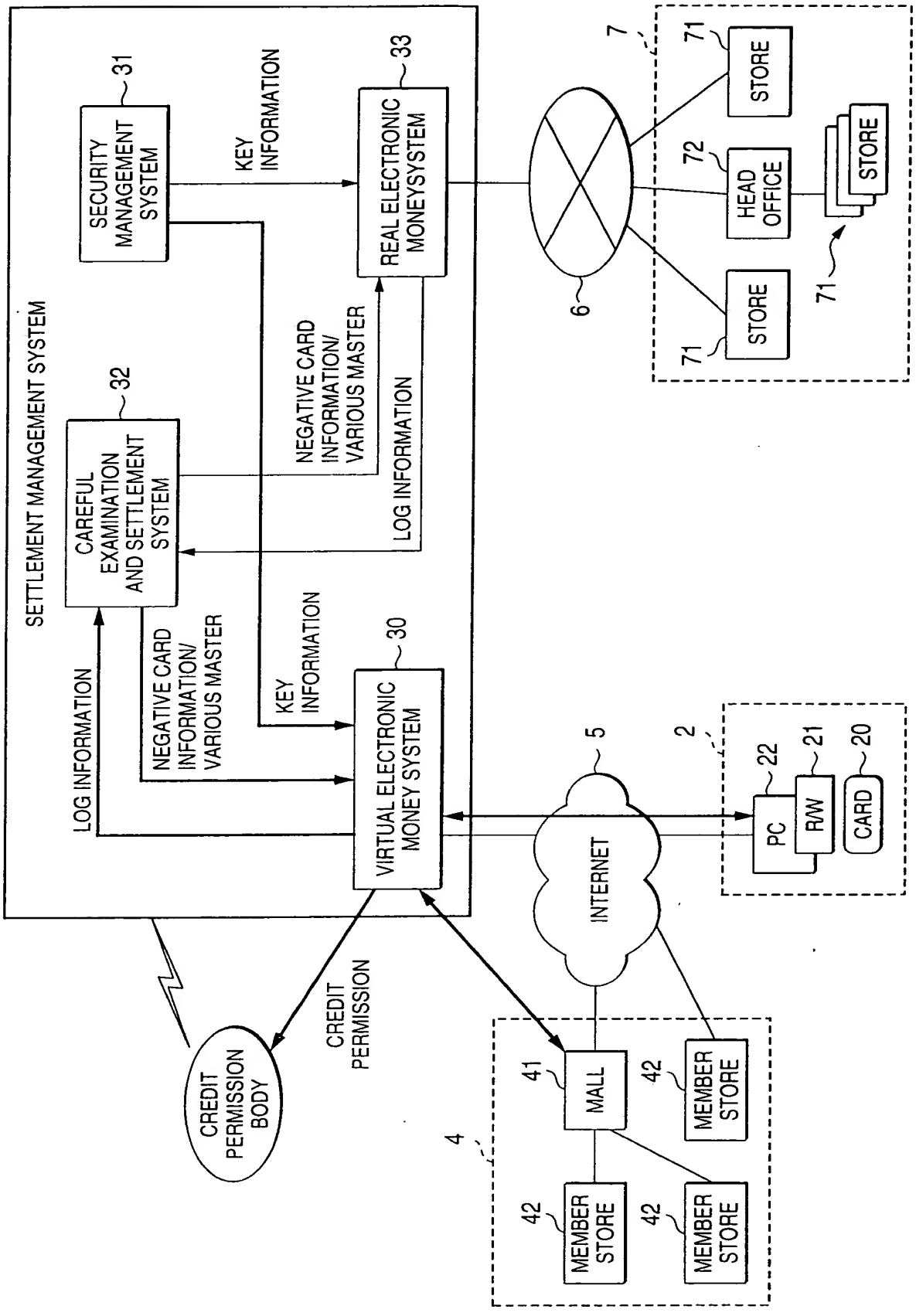

SETTLEMENT MANAGEMENT SYSTEM
SECURITY MANAGEMENT SYSTEM
31
KEY INFORMATION
REAL ELECTRONIC MONEYSYSTEM
33
CAREFUL EXAMINATION AND SETTLEMENT SYSTEM
32
NEGATIVE CARD INFORMATION/ VARIOUS MASTER
LOG INFORMATION
VIRTUAL ELECTRONIC MONEY SYSTEM
30
KEY INFORMATION
NEGATIVE CARD INFORMATION/ VARIOUS MASTER
LOG INFORMATION
CREDIT PERMISSION BODY
CREDIT PERMISSION
INTERNET
5
6
7
STORE
71
HEAD OFFICE
72
STORE
71
STORE
71
2
PC
22
R/W
21
CARD
20
4
MALL
41
MEMBER STORE
42
MEMBER STORE
42
MEMBER STORE
42

FIG. 7

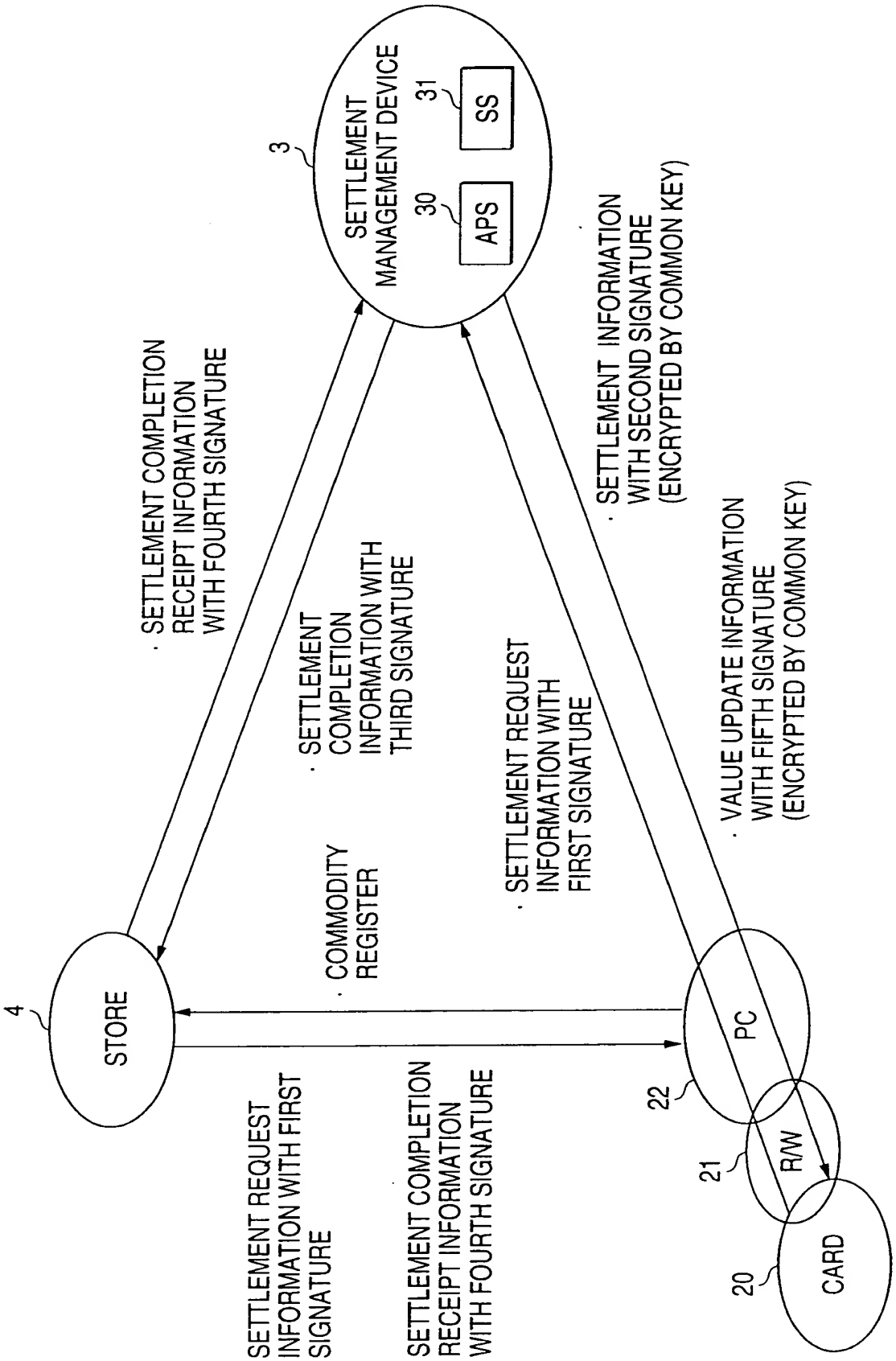

SETTLEMENT MANAGEMENT DEVICE
3
30
APS
31
SS
· SETTLEMENT COMPLETION RECEIPT INFORMATION WITH FOURTH SIGNATURE
· SETTLEMENT COMPLETION INFORMATION WITH THIRD SIGNATURE
· SETTLEMENT REQUEST INFORMATION WITH FIRST SIGNATURE
· SETTLEMENT INFORMATION WITH SECOND SIGNATURE (ENCRYPTED BY COMMON KEY)
· VALUE UPDATE INFORMATION WITH FIFTH SIGNATURE (ENCRYPTED BY COMMON KEY)
· COMMODITY REGISTER
· SETTLEMENT REQUEST INFORMATION WITH FIRST SIGNATURE
· SETTLEMENT COMPLETION RECEIPT INFORMATION WITH FOURTH SIGNATURE
4
STORE
22
PC
21
R/W
20
CARD

FIG. 8

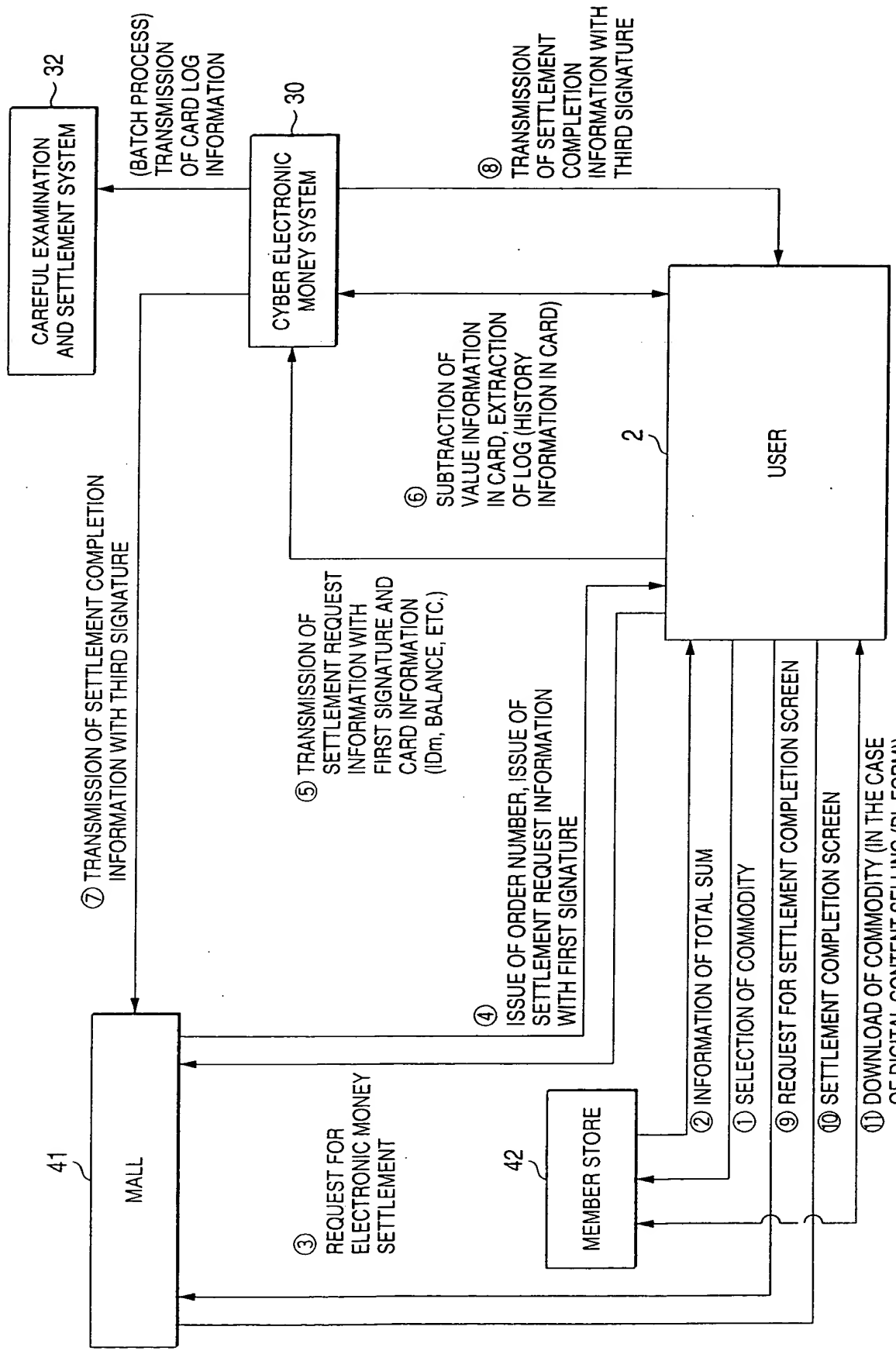

ELECTRIC MONEY OUTPUT
CAREFUL EXAMINATION AND SETTLEMENT SYSTEM
32
CYBER ELECTRONIC MONEY SYSTEM
30
USER
2
MALL
41
MEMBER STORE
42
(BATCH PROCESS) TRANSMISSION OF CARD LOG INFORMATION
⑧ TRANSMISSION OF SETTLEMENT COMPLETION INFORMATION WITH THIRD SIGNATURE
⑥ SUBTRACTION OF VALUE INFORMATION IN CARD, EXTRACTION OF LOG (HISTORY INFORMATION IN CARD)
⑤ TRANSMISSION OF SETTLEMENT REQUEST INFORMATION WITH FIRST SIGNATURE AND CARD INFORMATION (IDm, BALANCE, ETC.)
⑦ TRANSMISSION OF SETTLEMENT COMPLETION INFORMATION WITH THIRD SIGNATURE
④ ISSUE OF ORDER NUMBER, ISSUE OF SETTLEMENT REQUEST INFORMATION WITH FIRST SIGNATURE
③ REQUEST FOR ELECTRONIC MONEY SETTLEMENT
② INFORMATION OF TOTAL SUM
① SELECTION OF COMMODITY
⑨ REQUEST FOR SETTLEMENT COMPLETION SCREEN
⑩ SETTLEMENT COMPLETION SCREEN
⑪ DOWNLOAD OF COMMODITY (IN THE CASE OF DIGITAL CONTENT SELLING (DL FORM))

FIG. 9

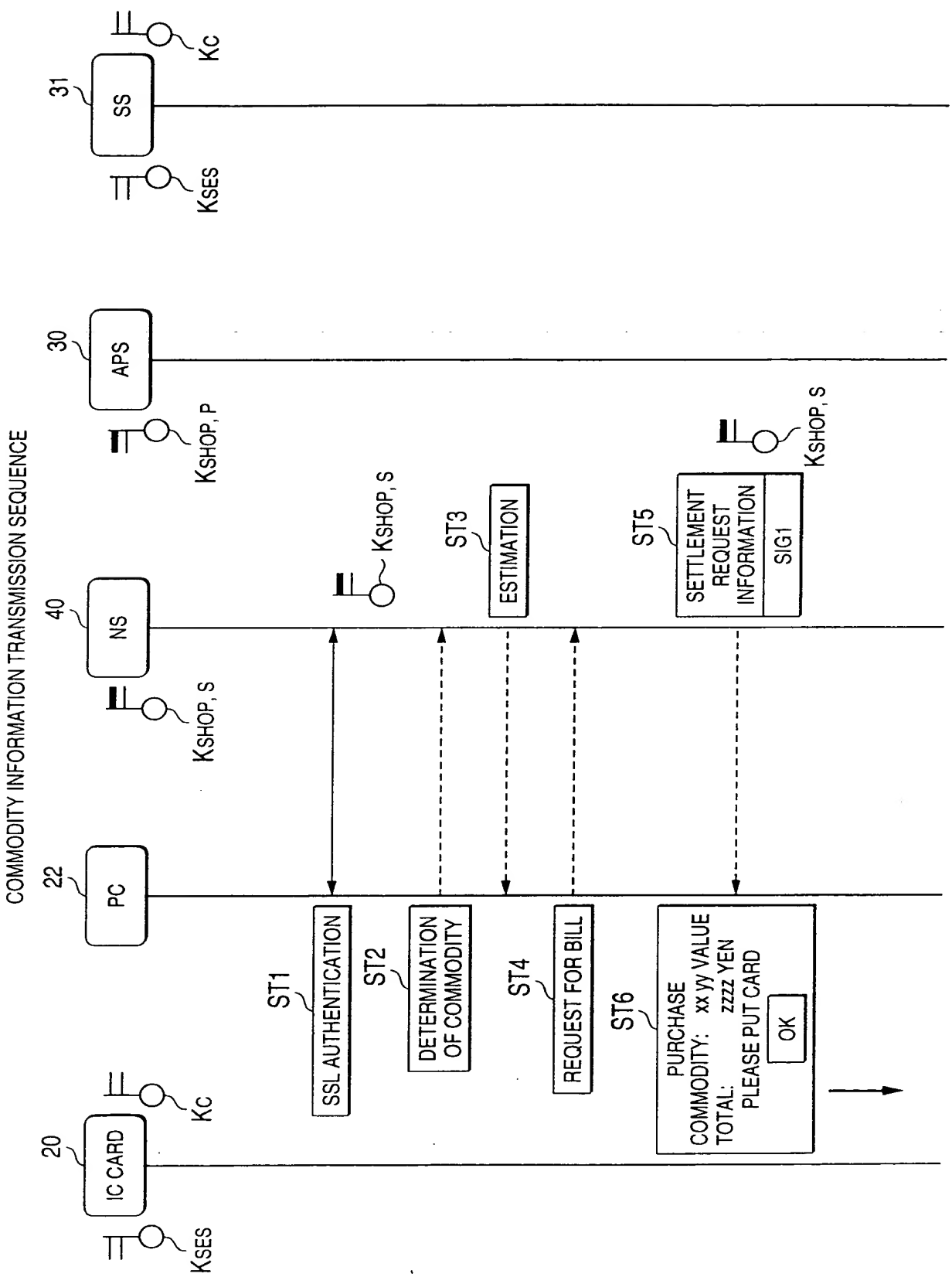

COMMODITY INFORMATION TRANSMISSION SEQUENCE
20
IC CARD
22
PC
40
NS
30
APS
31
SS
Kc
KSES
KSHOP, S
KSHOP, P
ST1
SSL AUTHENTICATION
ST2
DETERMINATION OF COMMODITY
ST3
ESTIMATION
ST4
REQUEST FOR BILL
ST5
SETTLEMENT REQUEST INFORMATION
SIG1
ST6
PURCHASE
COMMODITY: xx yy VALUE
TOTAL: zzzz YEN
PLEASE PUT CARD
OK

FIG. 10

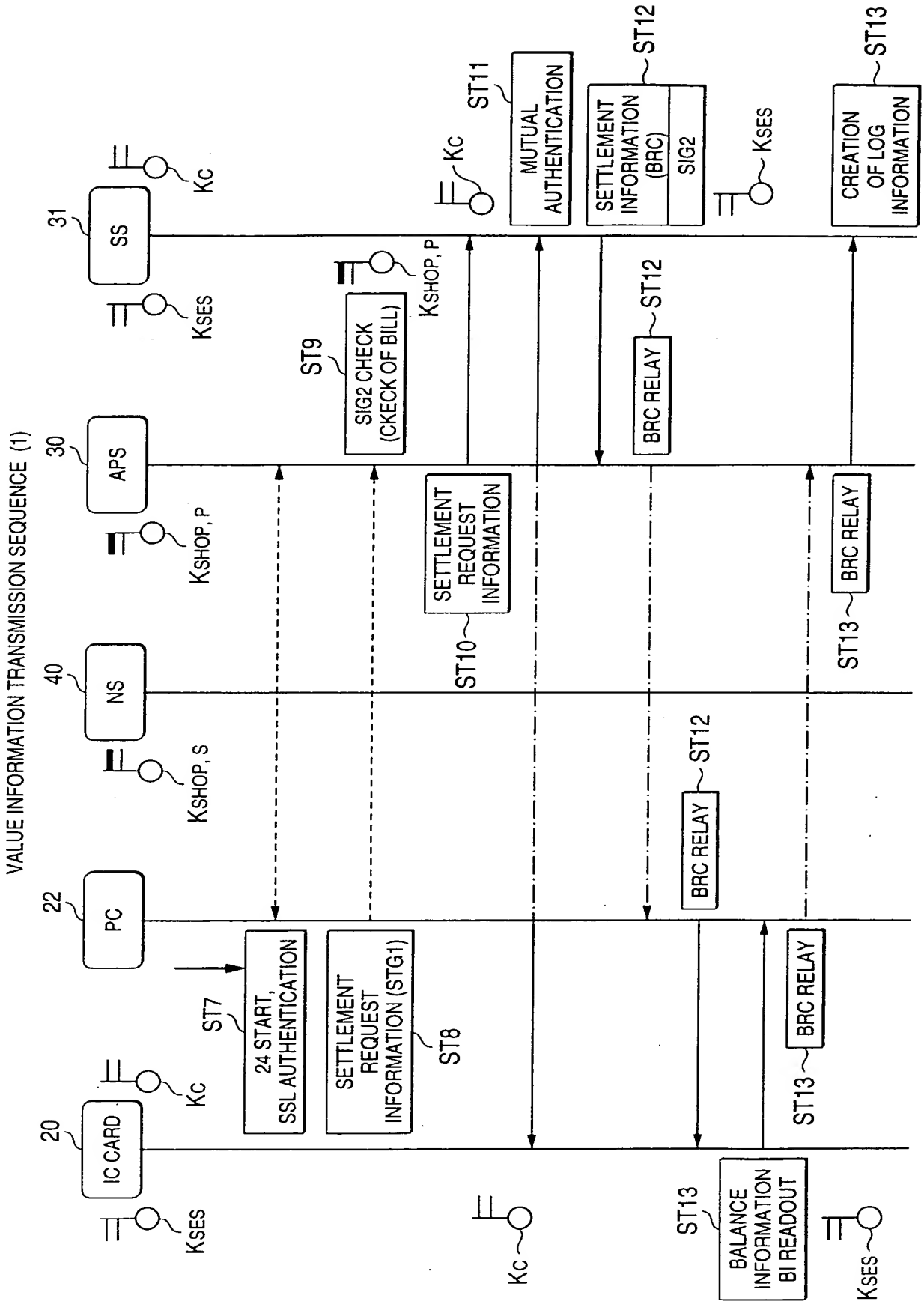

VALUE INFORMATION TRANSMISSION SEQUENCE (1)
20 IC CARD
22 PC
40 NS
30 APS
31 SS
KSES
KC
KSHOP, S
KSHOP, P
ST7
24 START, SSL AUTHENTICATION
ST8
SETTLEMENT REQUEST INFORMATION (STG1)
ST9
SIG2 CHECK (CKECK OF BILL)
ST10
SETTLEMENT REQUEST INFORMATION
ST11
MUTUAL AUTHENTICATION
ST12
BRC RELAY
SETTLEMENT INFORMATION (BRC)
SIG2
ST13
BRC RELAY
CREATION OF LOG INFORMATION
BALANCE INFORMATION BI READOUT

FIG. 11

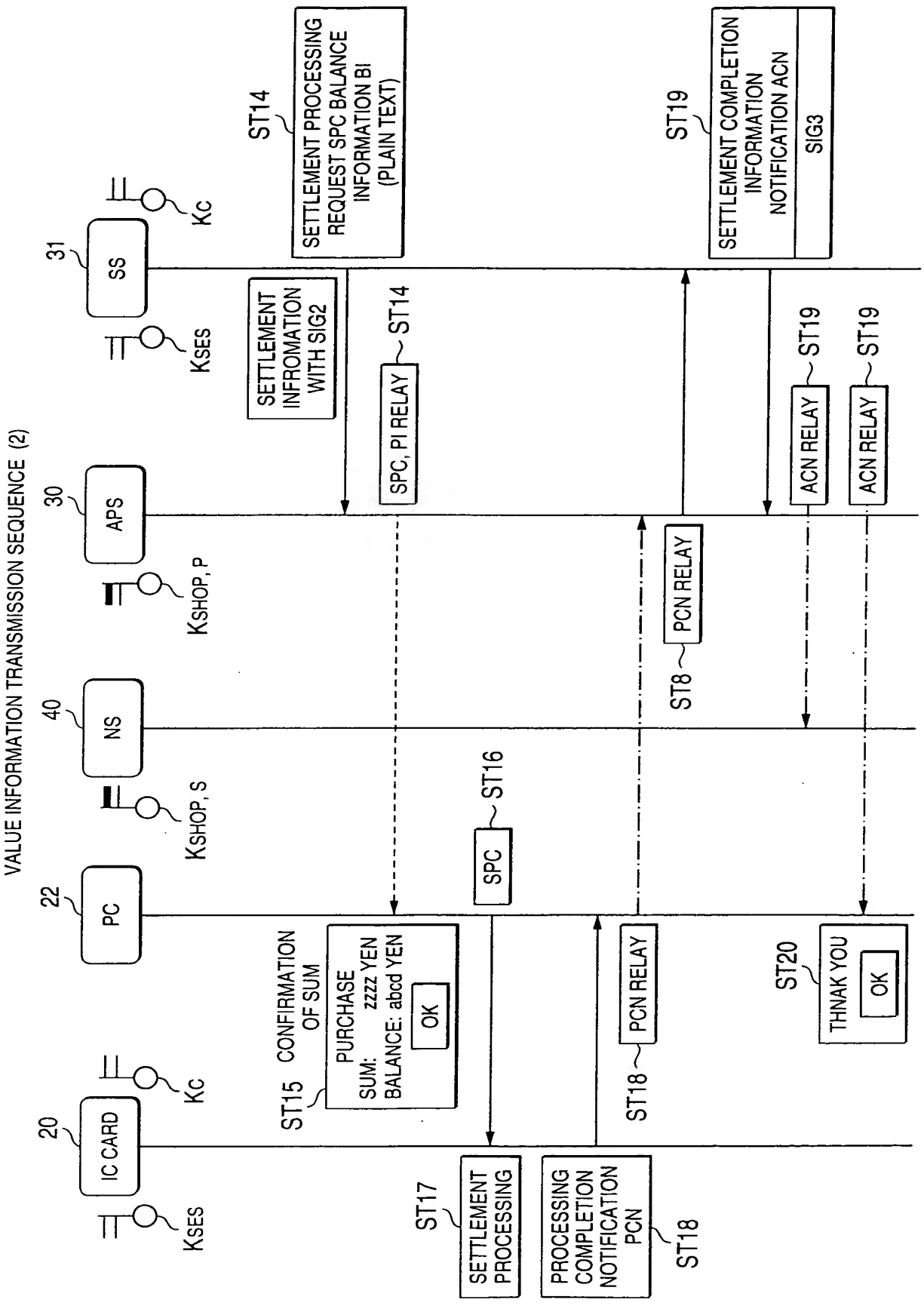

VALUE INFORMATION TRANSMISSION SEQUENCE (2)
20 IC CARD
Kc
KSES
22 PC
40 NS
KSHOP, S
30 APS
KSHOP, P
31 SS
KSES
Kc
ST14
SETTLEMENT PROCESSING REQUEST SPC BALANCE INFORMATION BI (PLAIN TEXT)
SETTLEMENT INFROMATION WITH SIG2
SPC, PI RELAY
ST14
ST19
SETTLEMENT COMPLETION INFORMATION NOTIFICATION ACN
SIG3
ACN RELAY
ST19
ACN RELAY
ST19
PCN RELAY
ST8
SPC
ST16
ST15 CONFIRMATION OF SUM
PURCHASE SUM: zzzz YEN
BALANCE: abcd YEN
OK
PCN RELAY
ST18
ST20
THNAK YOU
OK
ST17
SETTLEMENT PROCESSING
PROCESSING COMPLETION NOTIFICATION PCN
ST18

FIG. 12

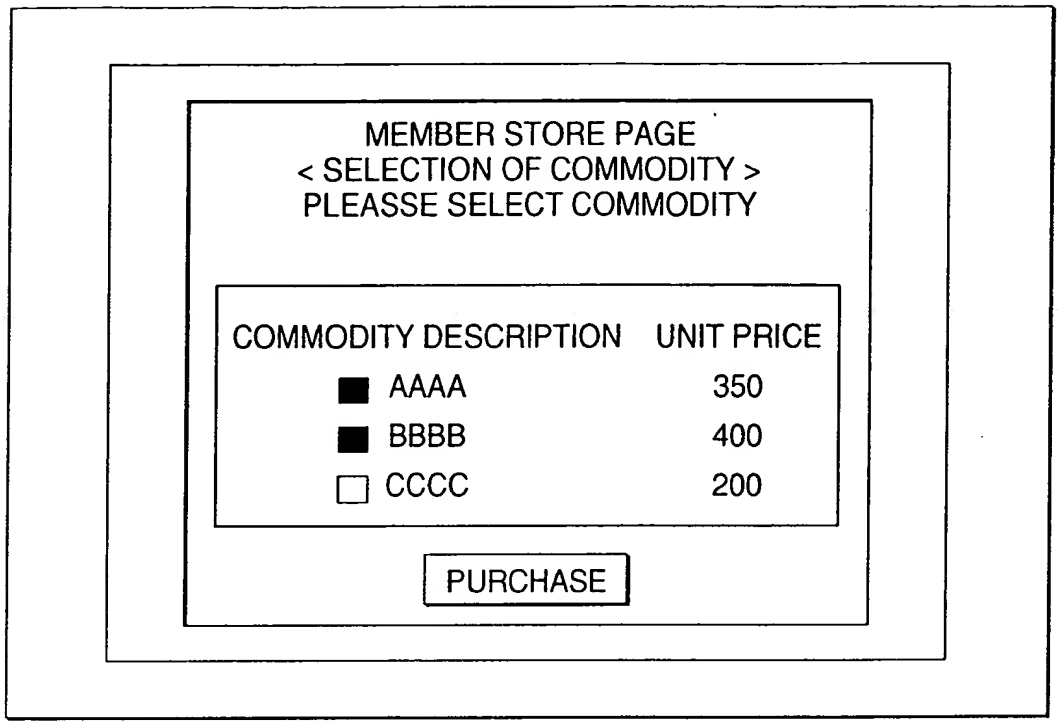

MEMBER STORE PAGE
< SELECTION OF COMMODITY >
PLEASSE SELECT COMMODITY
COMMODITY DESCRIPTION
UNIT PRICE
AAAA
350
BBBB
400
CCCC
200
PURCHASE

FIG. 13

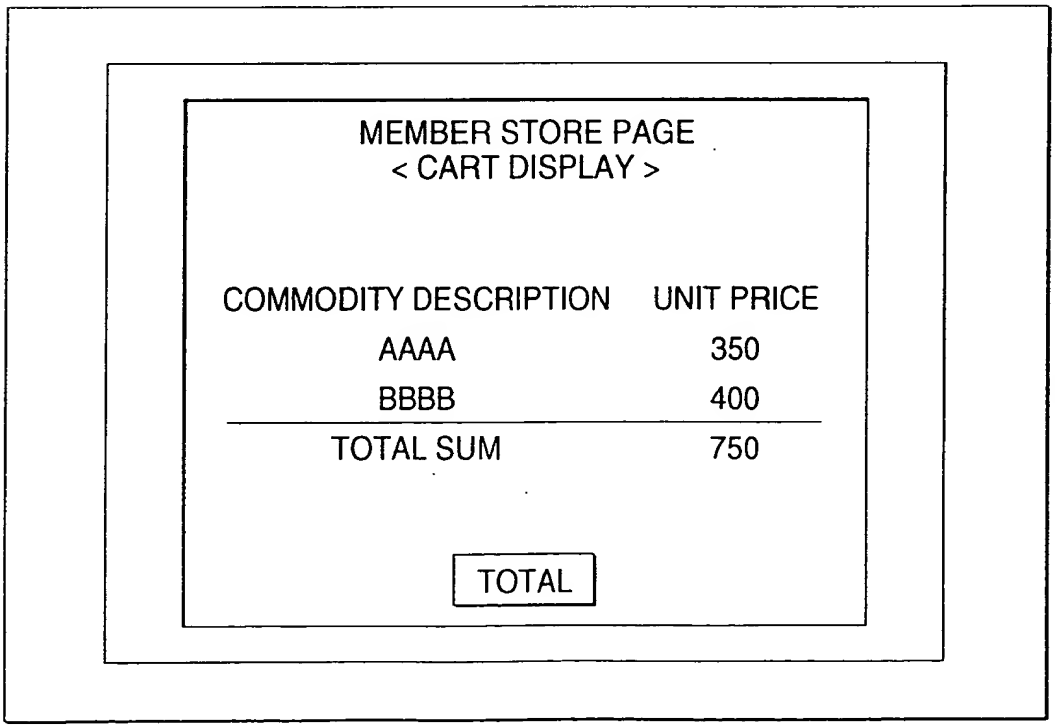

MEMBER STORE PAGE
< CART DISPLAY >
COMMODITY DESCRIPTION
UNIT PRICE
AAAA
350
BBBB
400
TOTAL SUM
750
TOTAL

FIG. 14

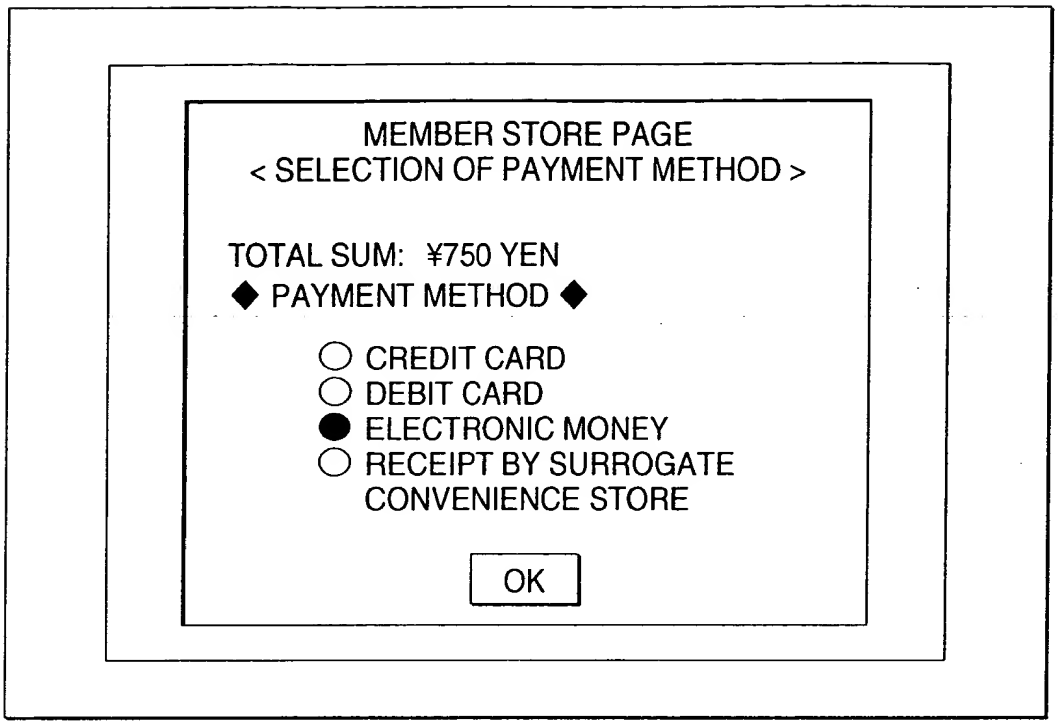

MEMBER STORE PAGE
< SELECTION OF PAYMENT METHOD >
TOTAL SUM: ¥750 YEN
◆ PAYMENT METHOD ◆
CREDIT CARD
DEBIT CARD
ELECTRONIC MONEY
RECEIPT BY SURROGATE CONVENIENCE STORE
OK

FIG. 15

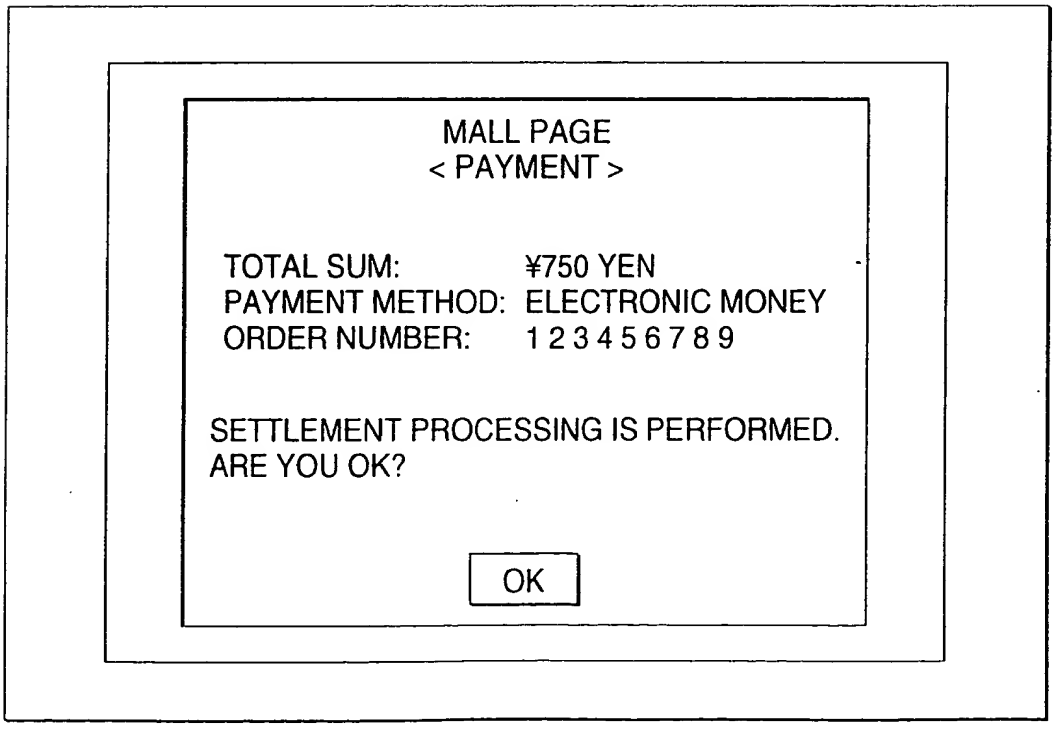

MALL PAGE
< PAYMENT >
TOTAL SUM: ¥750 YEN
PAYMENT METHOD: ELECTRONIC MONEY
ORDER NUMBER: 1 2 3 4 5 6 7 8 9
SETTLEMENT PROCESSING IS PERFORMED.
ARE YOU OK?
OK

FIG. 16

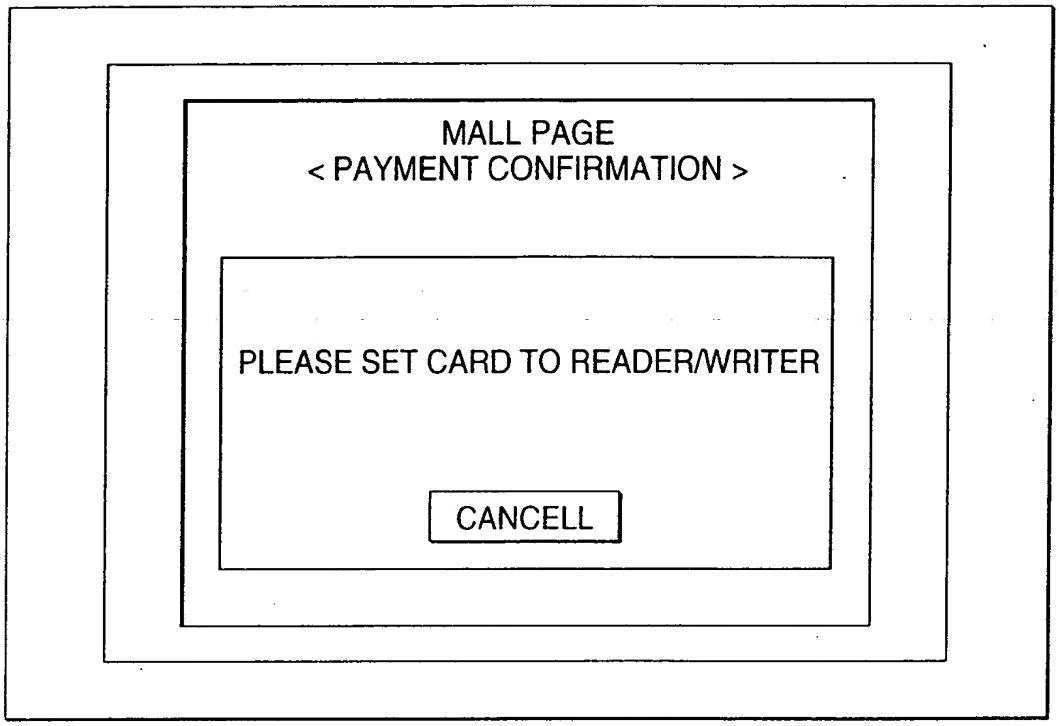

MALL PAGE
< PAYMENT CONFIRMATION >
PLEASE SET CARD TO READER/WRITER
CANCELL

FIG. 17

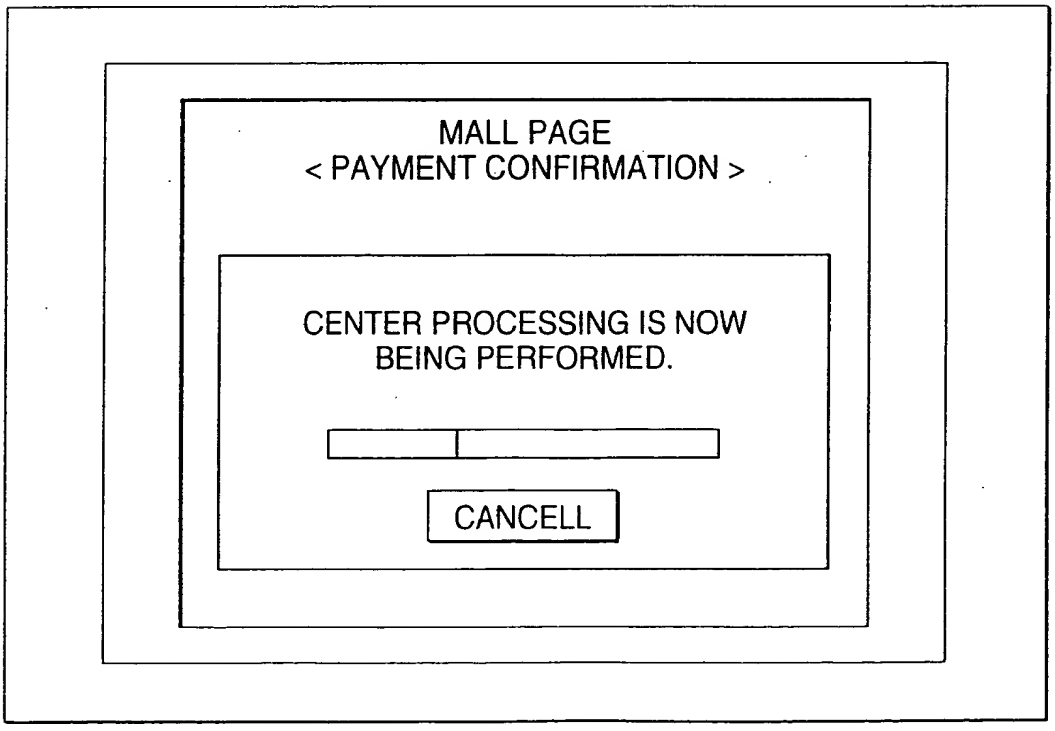

MALL PAGE
< PAYMENT CONFIRMATION >
CENTER PROCESSING IS NOW
BEING PERFORMED.
CANCELL

FIG. 18

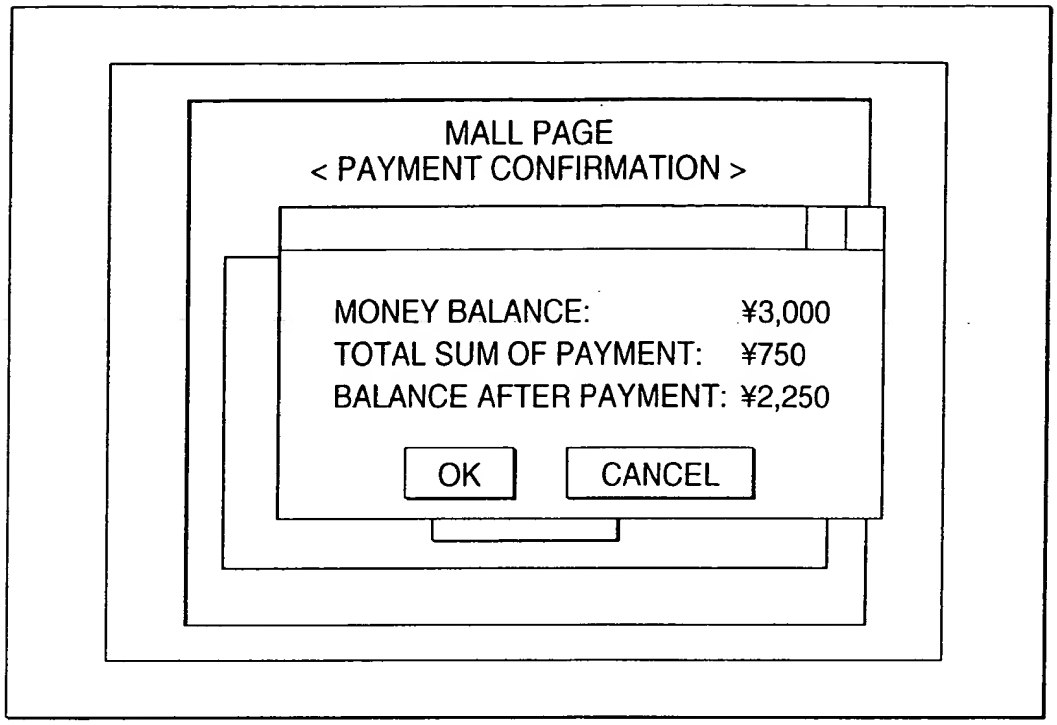

MALL PAGE
< PAYMENT CONFIRMATION >
MONEY BALANCE: ¥3,000
TOTAL SUM OF PAYMENT: ¥750
BALANCE AFTER PAYMENT: ¥2,250
OK
CANCEL

FIG. 19

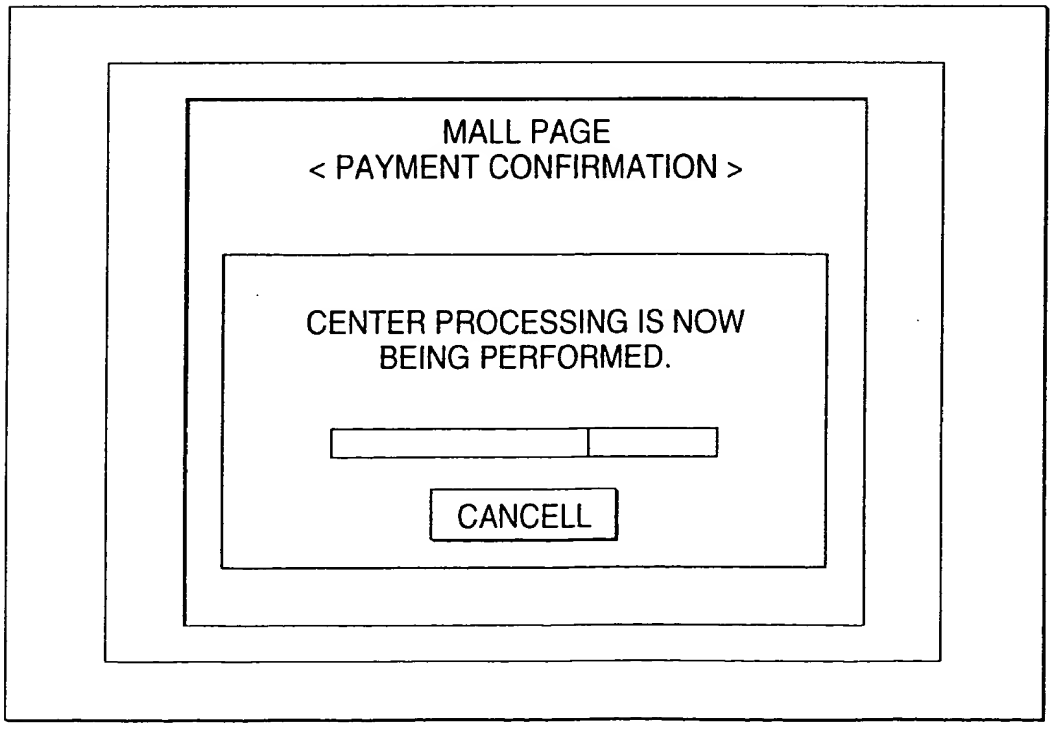

MALL PAGE
< PAYMENT CONFIRMATION >
CENTER PROCESSING IS NOW
BEING PERFORMED.
CANCELL

FIG. 20

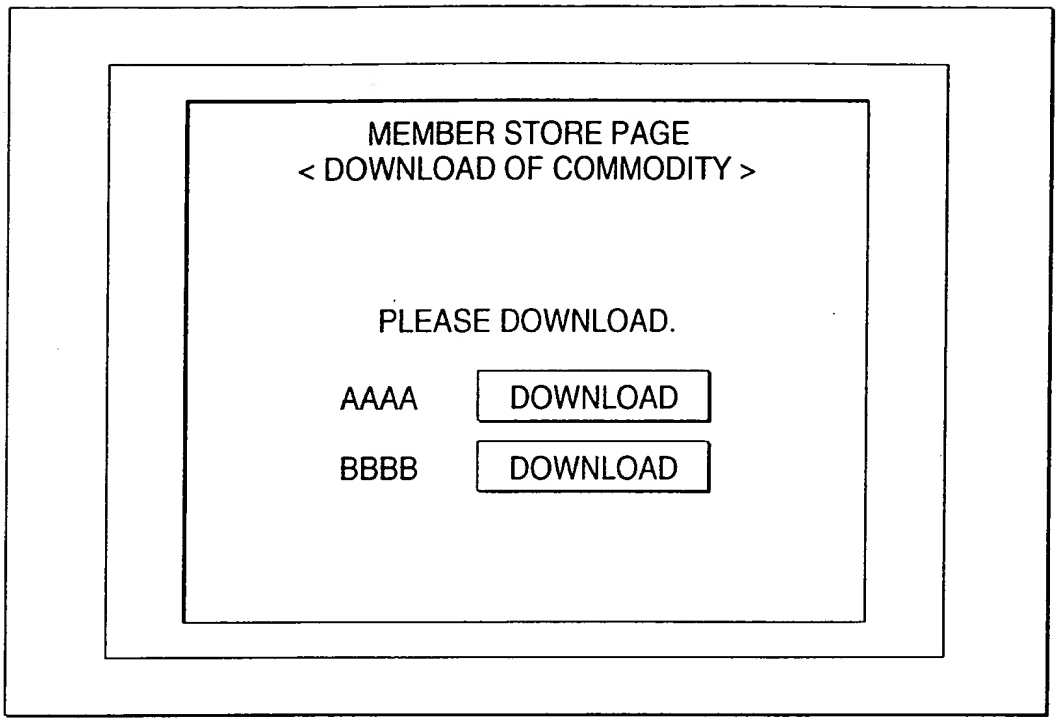

MEMBER STORE PAGE
< DOWNLOAD OF COMMODITY >
PLEASE DOWNLOAD.
AAAA
DOWNLOAD
BBBB
DOWNLOAD

FIG. 21

COMMODITY INFORMATION TRANSMISSION SEQUENCE

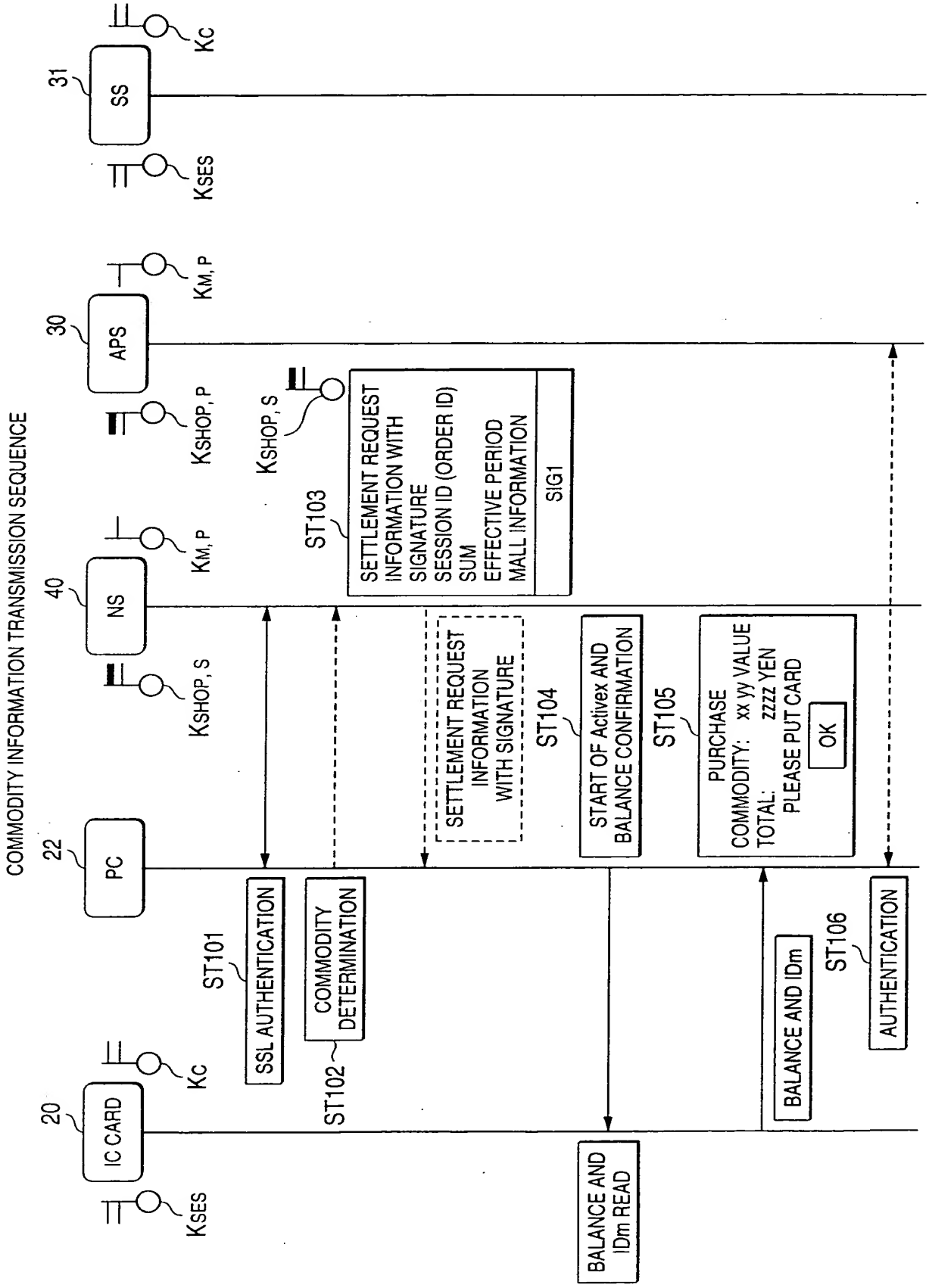


FIG. 22

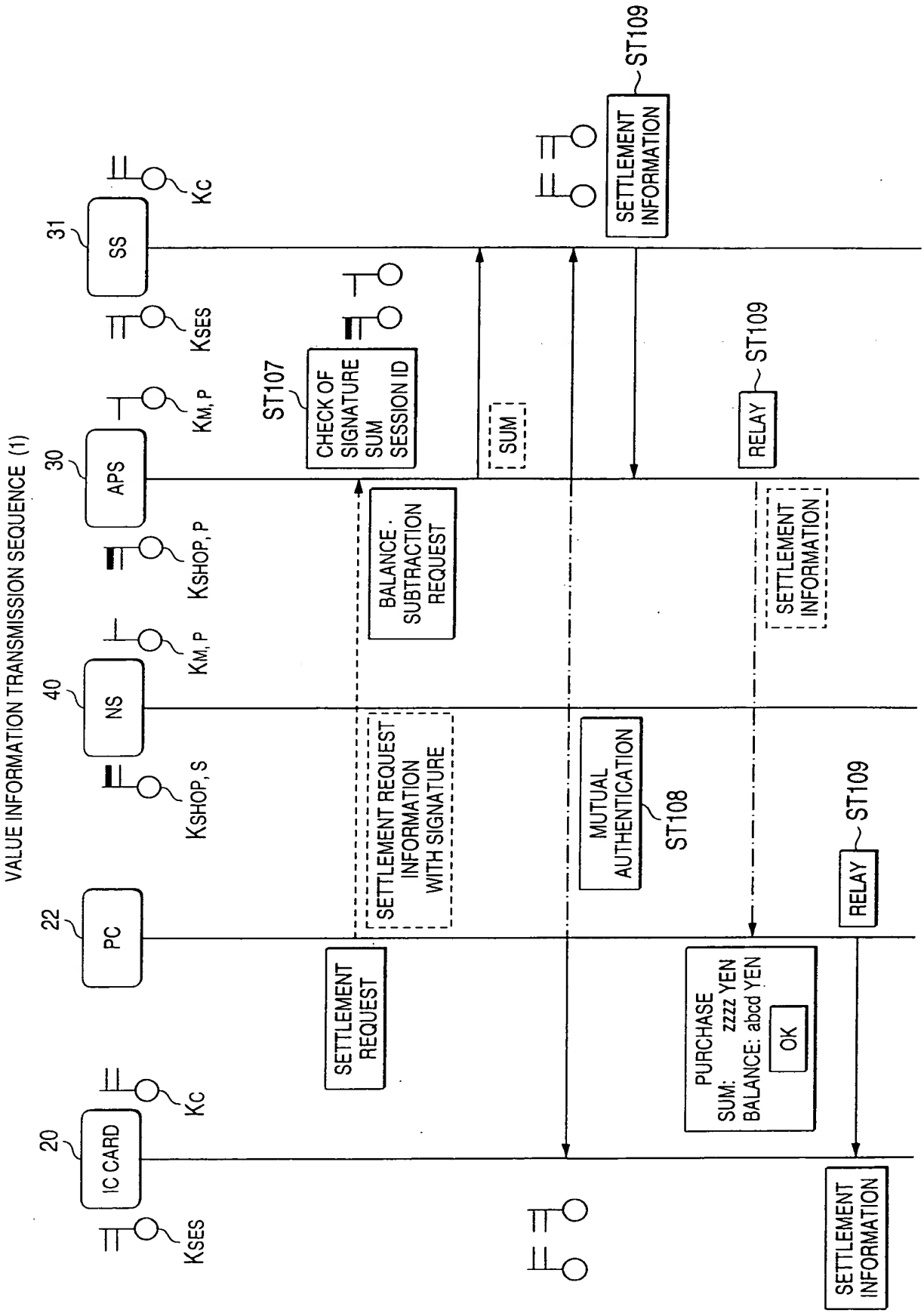

VALUE INFORMATION TRANSMISSION SEQUENCE (1)
20
IC CARD
22
PC
40
NS
30
APS
31
SS
KC
KSES
KSHOP, S
KM, P
KSHOP, P
SETTLEMENT REQUEST
SETTLEMENT REQUEST INFORMATION WITH SIGNATURE
BALANCE · SUBTRACTION REQUEST
ST107
CHECK OF SIGNATURE SUM SESSION ID
SUM
MUTUAL AUTHENTICATION
ST108
PURCHASE
SUM: zzzz YEN
BALANCE: abcd YEN
OK
RELAY
ST109
SETTLEMENT INFORMATION

FIG. 23

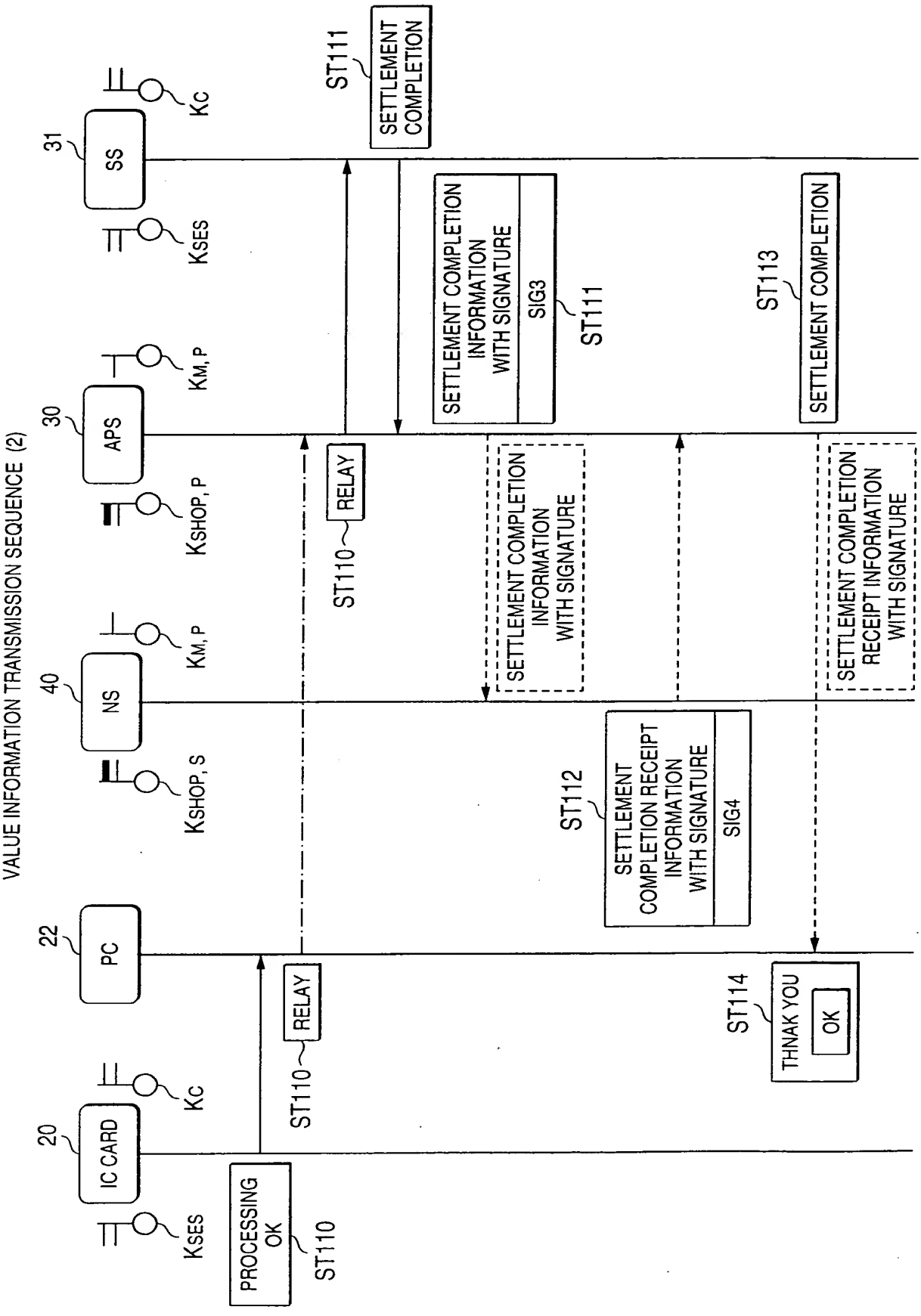

VALUE INFORMATION TRANSMISSION SEQUENCE (2)
20
IC CARD
KSES
KC
PROCESSING OK
ST110
22
PC
ST110
RELAY
40
NS
KSHOP, S
KM, P
ST110
RELAY
30
APS
KSHOP, P
KM, P
31
SS
KSES
KC
ST111
SETTLEMENT COMPLETION
SETTLEMENT COMPLETION INFORMATION WITH SIGNATURE
SIG3
ST111
SETTLEMENT COMPLETION INFORMATION WITH SIGNATURE
ST112
SETTLEMENT COMPLETION RECEIPT INFORMATION WITH SIGNATURE
SIG4
ST113
SETTLEMENT COMPLETION
SETTLEMENT COMPLETION RECEIPT INFORMATION WITH SIGNATURE
ST114
THNAK YOU
OK

FIG. 24

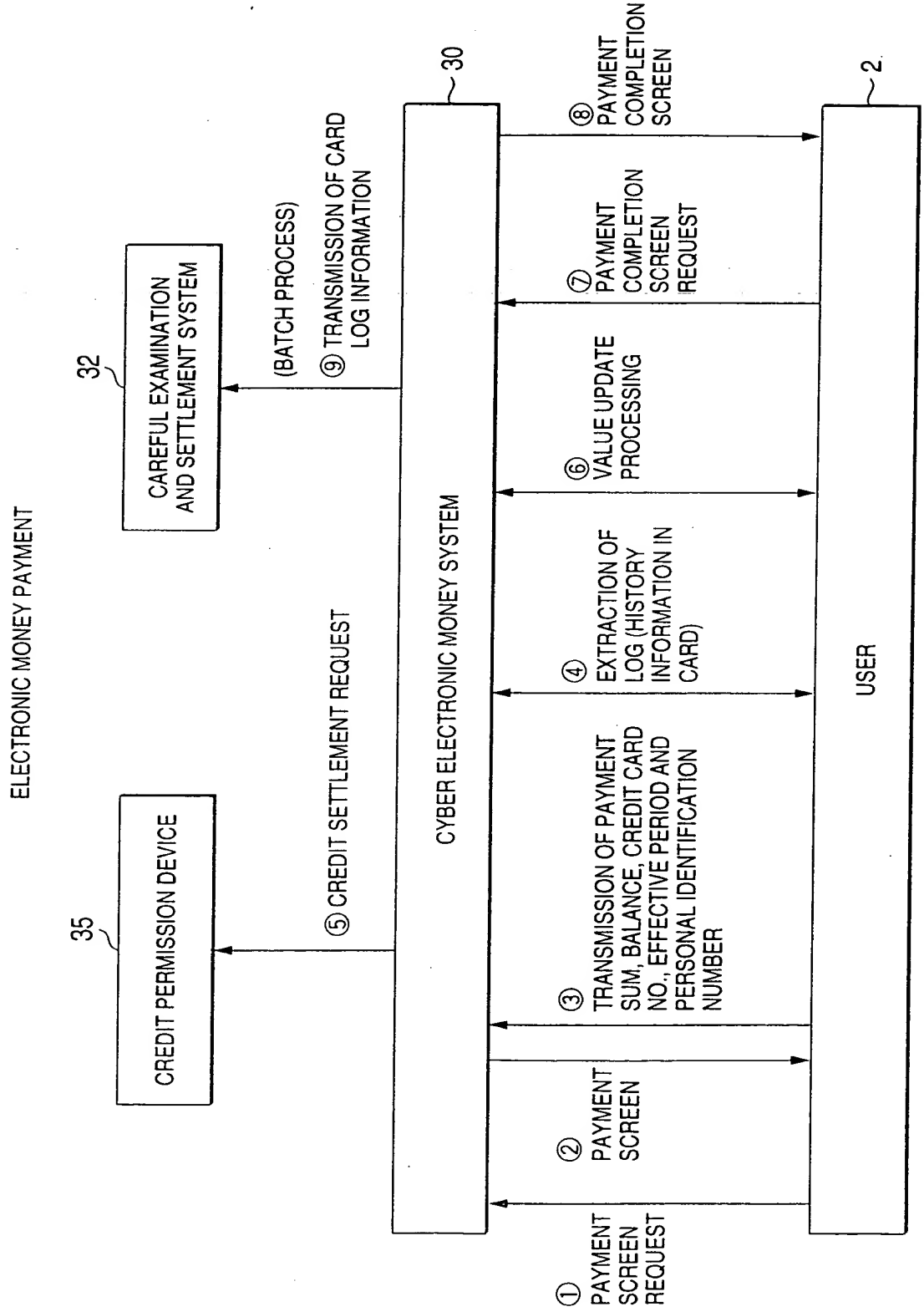

ELECTRONIC MONEY PAYMENT
CYBER ELECTRONIC MONEY SYSTEM
30
USER
2
CAREFUL EXAMINATION AND SETTLEMENT SYSTEM
32
CREDIT PERMISSION DEVICE
35
① PAYMENT SCREEN REQUEST
② PAYMENT SCREEN
③ TRANSMISSION OF PAYMENT SUM, BALANCE, CREDIT CARD NO., EFFECTIVE PERIOD AND PERSONAL IDENTIFICATION NUMBER
④ EXTRACTION OF LOG (HISTORY INFORMATION IN CARD)
⑤ CREDIT SETTLEMENT REQUEST
⑥ VALUE UPDATE PROCESSING
⑦ PAYMENT COMPLETION SCREEN REQUEST
⑧ PAYMENT COMPLETION SCREEN
⑨ TRANSMISSION OF CARD LOG INFORMATION
(BATCH PROCESS)

FIG. 25

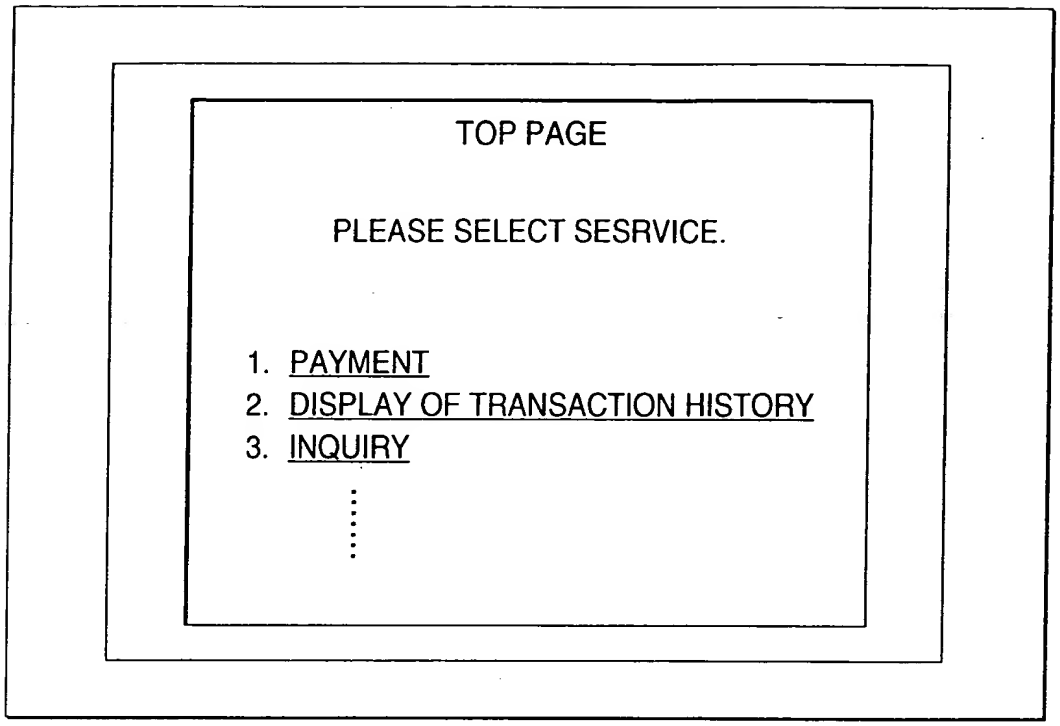

TOP PAGE
PLEASE SELECT SESRVICE.
1. PAYMENT
2. DISPLAY OF TRANSACTION HISTORY
3. INQUIRY

FIG. 26

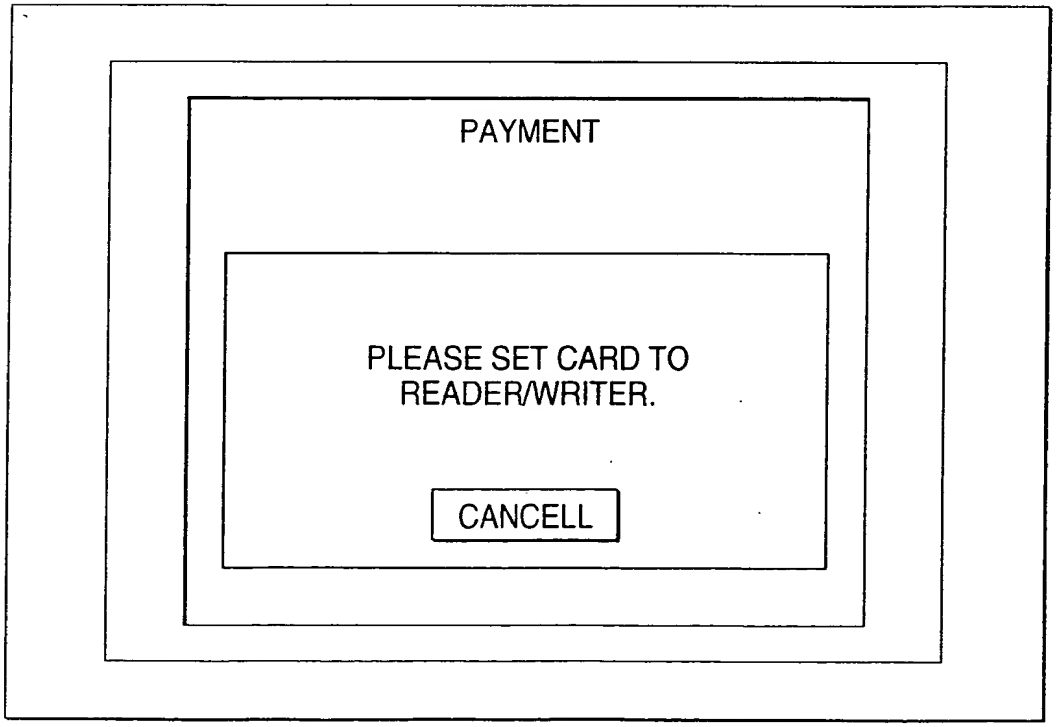

PAYMENT
PLEASE SET CARD TO READER/WRITER.
CANCELL

FIG. 27

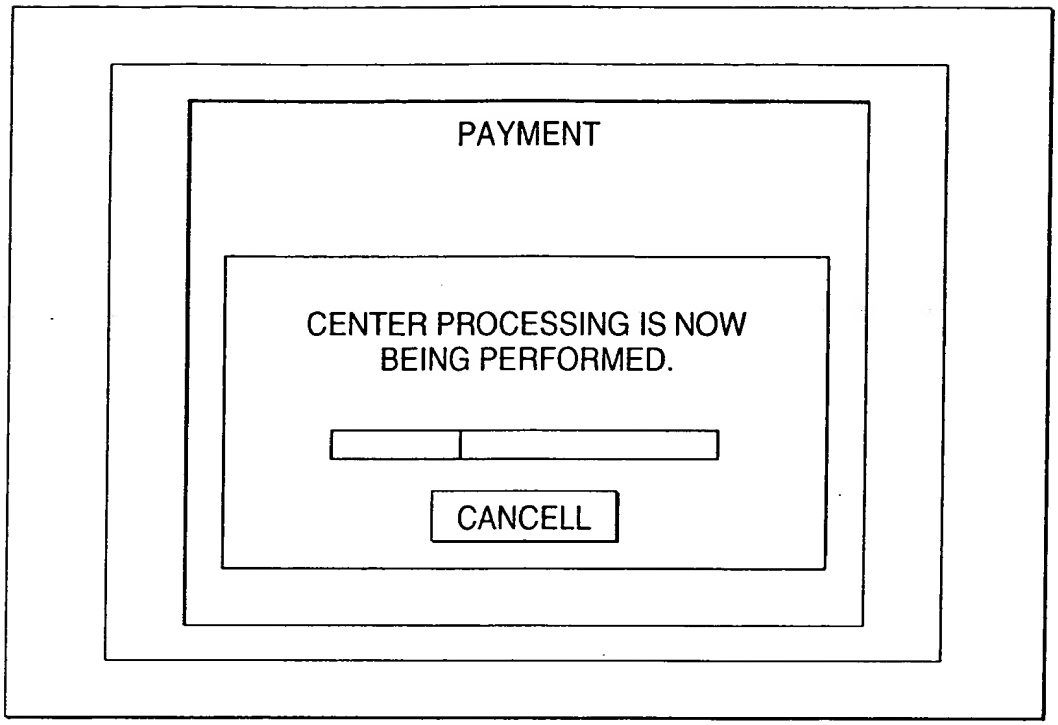

PAYMENT
CENTER PROCESSING IS NOW
BEING PERFORMED.
CANCELL

FIG. 28

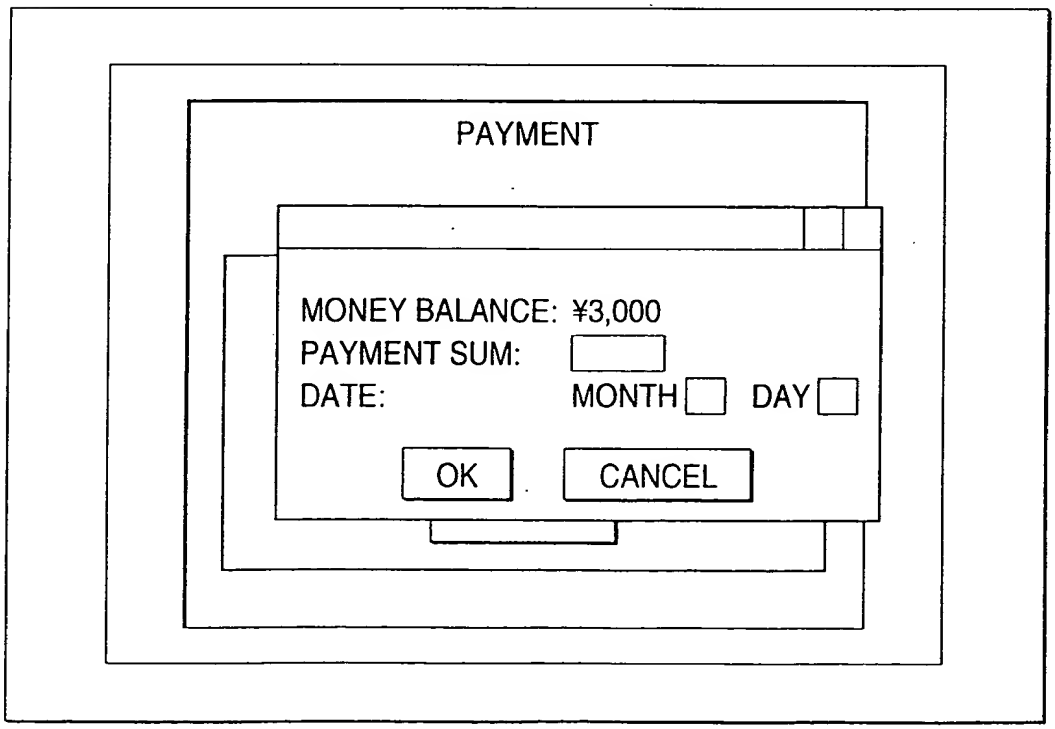

PAYMENT
MONEY BALANCE: ¥3,000
PAYMENT SUM:
DATE:
MONTH
DAY
OK
CANCEL

FIG. 29

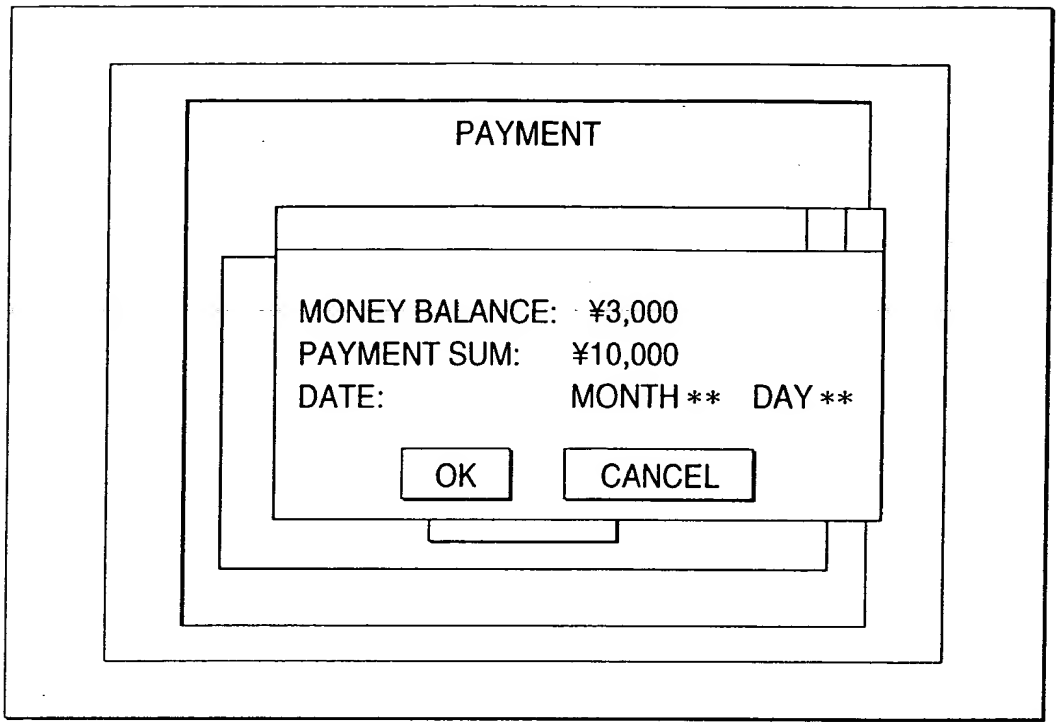

PAYMENT
MONEY BALANCE: ¥3,000
PAYMENT SUM: ¥10,000
DATE: MONTH ** DAY **
OK
CANCEL

FIG. 30

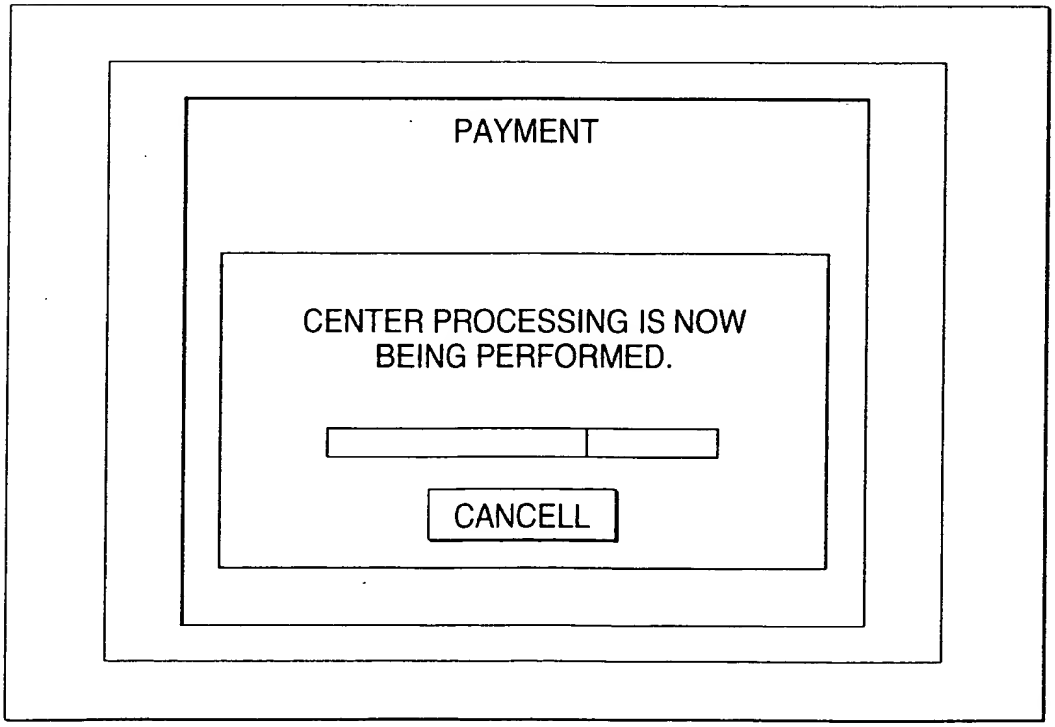

PAYMENT
CENTER PROCESSING IS NOW BEING PERFORMED.
CANCELL

FIG. 31

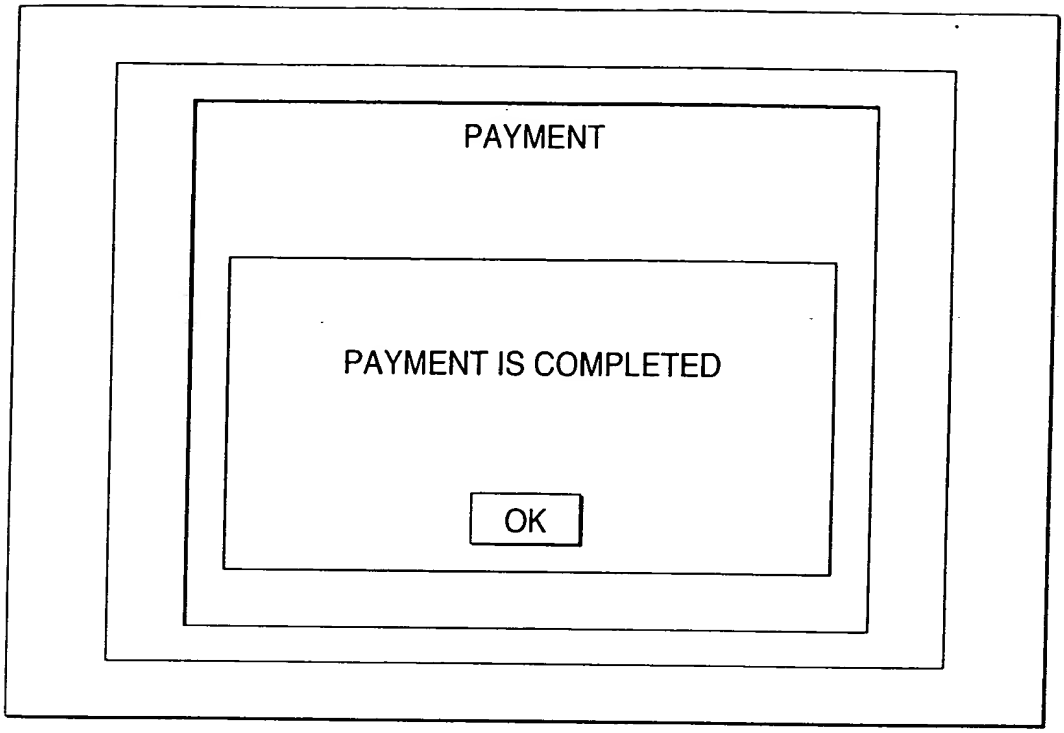
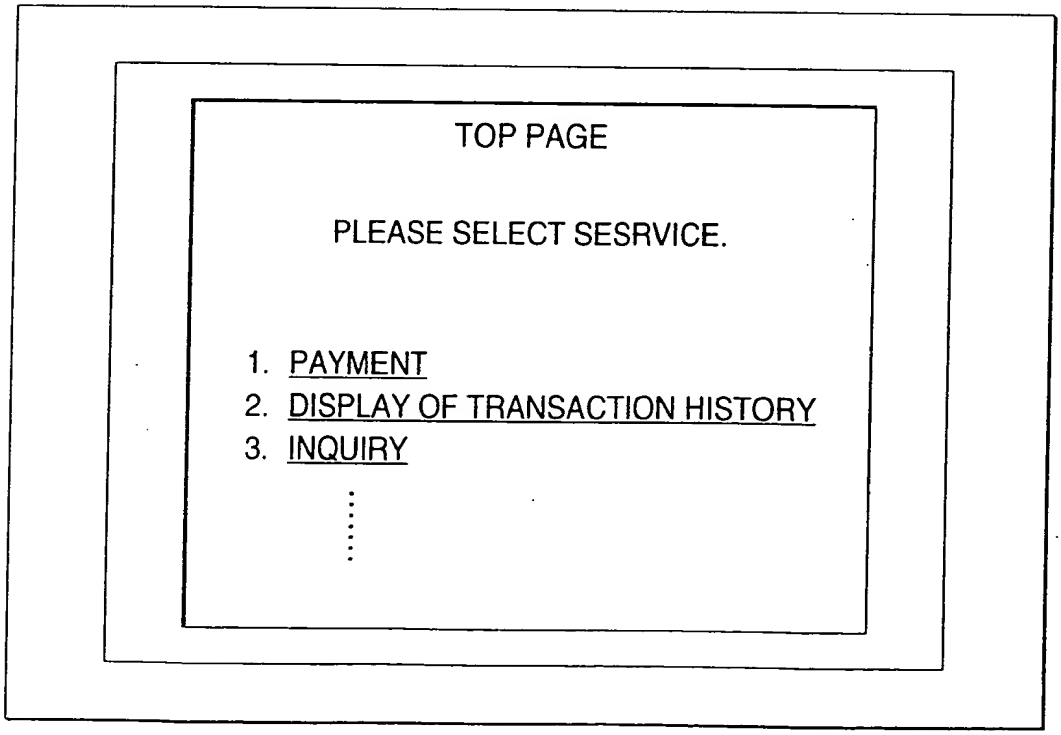

PAYMENT
PAYMENT IS COMPLETED
OK

FIG. 32


TOP PAGE
PLEASE SELECT SESRVICE.
1. PAYMENT
2. DISPLAY OF TRANSACTION HISTORY
3. INQUIRY